Applied GeoSystems 3315 Almaden Expressway, Suite 34, San Jose, CA 95118 (408) 264-7723

• FREMONT • IRVINE • HOUSTON • BOSTON • SACRAMENTO • CULVER CITY • SAN JOSE

[redacted]

11/9/89

at

ARCO Service Station No. 601
Southwest Corner of
Washington Avenue and Lewelling Boulevard
San Leandro, California

AGS Job 69034-1 [redacted]

Report prepared for

ARCO Products Company
P.O. Box 5811
San Mateo, California
by
Applied GeoSystems

William R. Dugan
Assistant Project
Geologist

Greg Barclay
Project Branch
Manager

Michael N. Clark
C.E.G. 1264

[redacted]

Applied GeoSystems 3315 Almaden Expressway, Suite 34, San Jose, CA 95118 (408) 264-7723

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REPORT
LIMITED ENVIRONMENTAL SITE ASSESSMENT
ARCO Service Station No. 601
Southwest Corner of
Washington Avenue and Lewelling Boulevard
San Leandro, California

For ARCO Products Company

INTRODUCTION

At the request of ARCO Products Company (ARCO), Applied GeoSystems conducted a limited environmental assessment to evaluate the presence of possible hydrocarbon contamination in the soil at ARCO Station No. 601. This assessment was limited to the immediate areas of the underground gasoline-storage tanks and waste-oil tank at the site. The work was conducted prior to tank removal and replacement activities at the site. The investigation involved drilling five soil borings and performing laboratory analyses on selected soil samples obtained from the borings. This report presents our field procedures, findings, interpretations, and conclusions.

SITE DESCRIPTION AND BACKGROUND

ARCO Service Station No. 601 is an operating service station southwest of the intersection of Washington Avenue and Lewelling Boulevard, in San Leandro, California. The location of the site is shown on the Site Vicinity Map (Plate P-1). The site is a relatively flat lot, covered with asphalt and concrete.

It is our understanding, from information supplied by ARCO, that two 6,000-gallon underground gasoline-storage tanks (T1 and T3), two 4,000-gallon underground gasoline-storage tanks (T2 and T4), and one underground 550-gallon waste-oil storage tank (T5) are at the site and that the tanks were installed in 1974. The approximate locations of the underground storage tanks and other pertinent features at the site are shown on the Generalized Site Plan (Plate P-2).

REGIONAL AND LOCAL HYDROGEOLOGY

The ARCO station is within the East Bay Plain, located in the west-central portion of the San Leandro Cone. The active Hayward Fault is approximately 2-1/2 miles east of the site. Helley et. al. (1979) mapped the earth materials underlying the site area as Quaternary bay mud deposits composed of dark plastic clay and silty clay rich in organic material. The site is located approximately 700 feet north of the San Leandro Creek, approximately 1,400 feet

east of the Estudillo Canal, and approximately 1-3/4 miles northeast of Roberts Landing on the eastern shoreline of the San Francisco Bay.

The inferred direction of ground-water flow in the vicinity of the site is to the west-northwest based on regional and local topography and drainage patterns. Ground water was encountered during our recent drilling activities at a depth of approximately 14-1/2 feet, which stabilized in the borings at a depth of approximately 11 feet.

FIELD WORK

Drilling

Field work performed at the site by Applied GeoSystems on behalf of ARCO was conducted in accordance with Applied GeoSystems' Site Safety Plan No. 69034-1S, dated August 1, 1989 (Applied GeoSystems, 1989). Five soil borings were drilled on August 2, 1989: four borings (B-1 through B-4) near underground gasoline-storage tanks T1 through T4 and one soil boring (B-5) was drilled near waste-oil tank, T5. The borings were drilled to evaluate potential hydrocarbon contamination of the soil in the immediate area of these tanks. The borings were drilled to a depth of approximately 10-1/2 to 15-1/2 feet. The locations of the five borings are shown on Plate P-2. The borings were backfilled to grade with a slurry of water, cement, sand, and bentonite.

Soil Sampling

Seventeen soil samples were collected from borings B-1 through B-5 during drilling. These samples, described on the Logs of Boring (Plates P-4 through P-8), were collected at 5-foot intervals from the ground surface to the total depth of the borings. A summary of the drilling and sampling methods used for this assessment are presented in Field Procedures, Appendix A.

Soil Description

The soil encountered during this assessment consisted primarily of silty clay with lesser amounts of sandy clay and clayey silt. Silty clay was encountered in boring B-1 below the surface asphalt and extended to the base of the boring at a depth of approximately 14-1/2 feet. The earth materials encountered within borings B-2 and B-3 consisted of clayey silt between the depths of approximately 1 foot to 3-1/2 feet and silty clay between the depths of approximately 3-1/2 feet to 14-1/2 feet and 10 feet, respectively. Clayey sand was encountered in boring B-4 below the surface asphalt to a depth of approximately 2-1/2 feet, with sandy clay encountered below the clayey sand to a depth of approximately 8 feet, and silty clay encountered below the sandy clay to a depth of approximately 10-1/2 feet. Sandy clay was encountered in boring B-5 below the surface asphalt to a depth of approximately

3-1/2 feet, with silty clay encountered below the sandy clay to a depth of approximately 10-1/2 feet.

Ground water was encountered in borings B-1 and B-2 at depths of approximately 10-1/2 feet and 11-1/2 feet respectively, and stabilized in both borings at a depth of approximately 11 feet 1 hour after initial encounter. Borings B-3 through B-5 were drilled to a depth of approximately 10-1/2 feet, and ground water was not encountered in these borings. [redacted] hydrocarbon product between approximately 1 to 3 inches was encountered in borings B-1 and B-2.

A summary of the Unified Soil Classification System used to identify the soil excavated during drilling is presented on Plate P-3. Descriptions of earth materials encountered in borings B-1 through B-3 are presented on the Logs of Boring (Plates P-4 through P-8). Graphic interpretations of the soil stratigraphy encountered in the borings are shown on Geologic Cross Sections A-A' and B-B' (Plate P-9).

LABORATORY ANALYSES

Fourteen soil samples collected from borings B-1 through B-5 were selected for laboratory analysis. The selected samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by modified Environmental Protection Agency (EPA) Method 5030/8015, and for

purgeable gasoline constituents benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) by EPA Method 8020. Two samples collected from boring B-5 also were analyzed for total oil and grease (TOG) and for halogenated volatile organic compounds (VOC) by EPA Method 503E and EPA Method 8010, respectively.

RESULTS OF LABORATORY ANALYSES

Results of laboratory analyses of selected soil samples collected from borings [redacted] drilled adjacent to the gasoline-storage tanks, indicated concentrations o[redacted]p to [redacted] at a depth of approximately 5 feet and [redacted]p t[redacted] at a depth of approximately 10 feet. Concentrations of benzene, toluene, ethylbenzene, and total xylene isomers up to 60 ppm, 450 ppm, 110 ppm, and 660 ppm, respectively, were reported in samples collected from depths of approximately 5 to 10 feet. Nondetectable concentrations TPHg and nondetectable to low levels (0.007 to 0.035 ppm) of BTEX were reported in samples collected from depths of approximately 14 to 15 feet in borings B-1 and B-2; however, these samples were collected below static water level.

Results of laboratory analyses of soil samples collected at approximate depths of 5 and 10 feet from boring B-5 drilled adjacent to the waste-oil tank indicated TPHg at concentrations up to 2,600 ppm, TOG concentrations up to 4,800 ppm, and concentrations of benzene, toluene, ethylbenzene, and total xylene isomers up to 10 ppm, 90 ppm, 21 ppm, and 130

ppm respectively. VOC were nondetectable in samples analyzed from boring B-5. The results of the laboratory analyses are presented in the Analysis Data Sheets included in Appendix B. Laboratory results of samples analyzed for TPHg and BTEX are summarized in Table 1.

TABLE 1
RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES
ARCO Station No. 601
Washington Avenue and Lewelling Boulevard
San Leandro, California

Sample Identifier	TPHg	B	T	E	X	TOG	VOC
S-5-B1	[illegible]	8.3	19	5.1	26	NT	NT
S-10-B1	[illegible]	10	37	6	48	NT	NT
S-15-B1	<1	0.007	0.011	<0.005	0.012	NT	NT
S-5-B2	[illegible]2,000	[illegible]	450	110	660	NT	NT
S-10-B2	<1	0.015	0.016	<0.005	0.018	NT	NT
S-14-B2	<1	0.015	0.030	<0.005	0.035	NT	NT
S-5-B3	23	0.710	<0.05	0.40	0.034	NT	NT
S-10-B3	[illegible]	0.700	3.2	1.4	9.6	NT	NT
S-5-B4	12	0.33	0.37	<0.05	0.75	NT	NT
S-10-B4	65	1.9	2.0	0.7	4.6	NT	NT
S-5-B5	[illegible]	2.1	3.8	0.8	2.8	[illegible]	BDC
S-10-B5	[illegible]	10	90	21	130	[illegible]	BDC

Results in milligrams per kilogram (mg/kg), or parts per million (ppm).
TPHg: Total petroleum hydrocarbons as gasoline
B:benzene T:toluene E:ethylbenzene X:total xylene isomers
BDC: Report concentration below detection concentration
NT: Not tested.
Sample identification:

```
S-10-B3
| | └─Boring number
| └───Approximate sample depth in feet
└─────Soil sample
```

CONCLUSIONS

The following conclusions are based on the results of this limited assessment.

- The shallow soil in the area of the four underground gasoline-storage tanks and one underground waste-oil tank has been affected by hydrocarbon contamination. This is based on the elevated concentrations of TPHg and BTEX reported in samples collected from borings B-1 through B-4 and elevated concentrations of TPHg and TOG reported in samples from boring B-5.

- The first-encountered ground water beneath the site in the area of the underground gasoline tanks appears to have been affected by hydrocarbon contamination. [redacted]

LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental geological practice in California at the time this assessment was performed. This

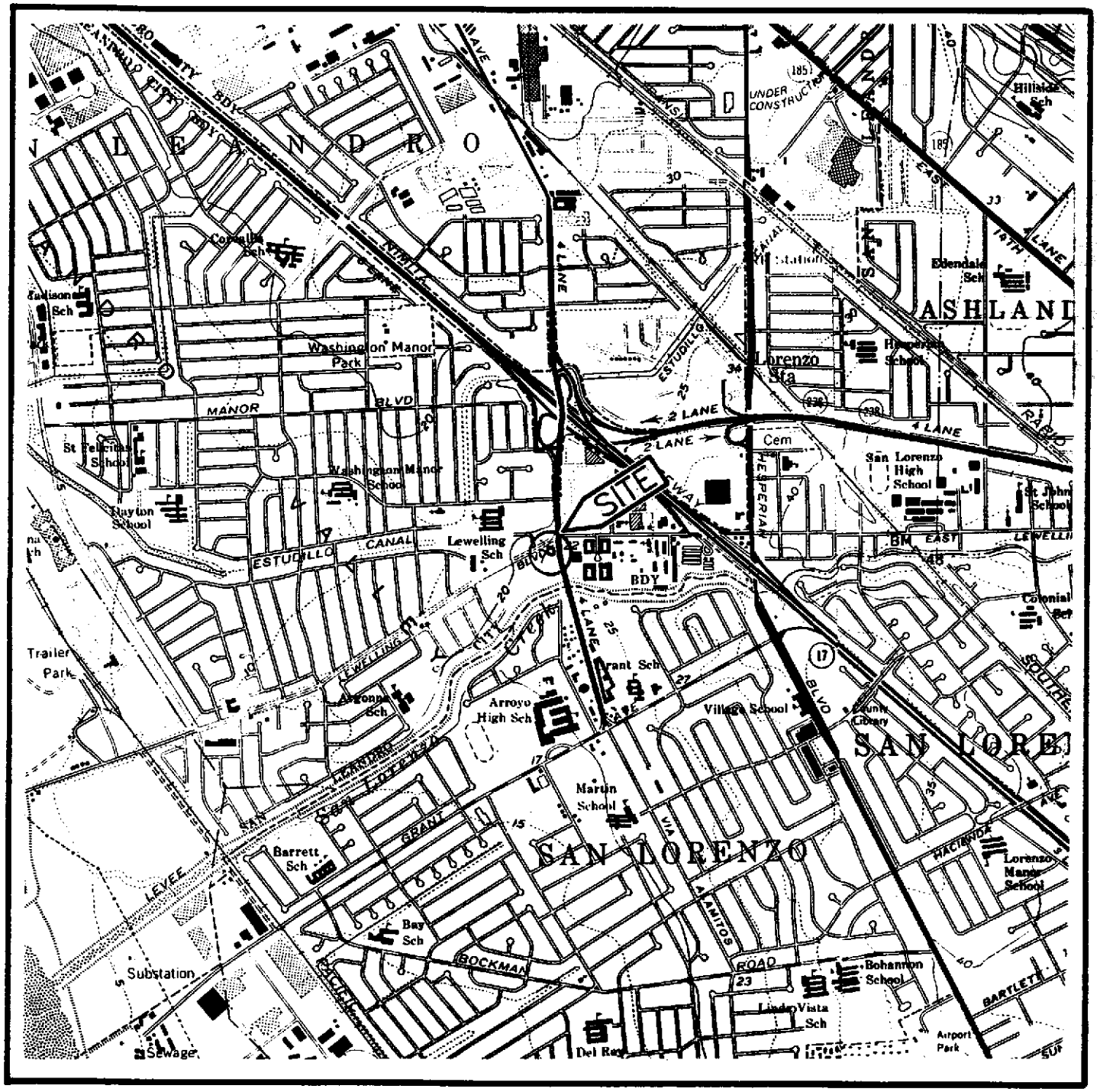
assessment was conducted solely for the purpose of evaluating environmental conditions of the soil with respect to hydrocarbon-product contamination at the subject site in the immediate area of the product-storage tanks. No soil engineering or geotechnical implications are stated or should be inferred. Evaluation of the geologic conditions at the site for the purpose of this assessment is made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional work, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of assessment.

REFERENCES CITED

Applied GeoSystems. August 1, 1989. Site Safety Plan Subsurface Environmental Assessment at the ARCO Service Station No. 601, Washington Avenue and Lewelling Boulevard, San Leandro, California: AGS Report No. 69034-1S.

Clark, J. C. 1981. Stratigraphy, Paleontology, and Geology of the Central Santa Cruz Mountains, California Coast Ranges. U.S. Geological Survey Professional Paper 1168.

Helley, E.S., K.R. Lajoie, W.E. Spangle, and M.L. Blair. 1979. Flatland deposits of the San Francisco Bay region, California. U.S. Geological Survey Professional Paper 943.



Source: U.S. Geological Survey
7.5-Minute Quadrangle
Photorevised 1984
Hayward/San Leandro, California

N

Approximate Scale

2000 1000 0 2000 4000

feet

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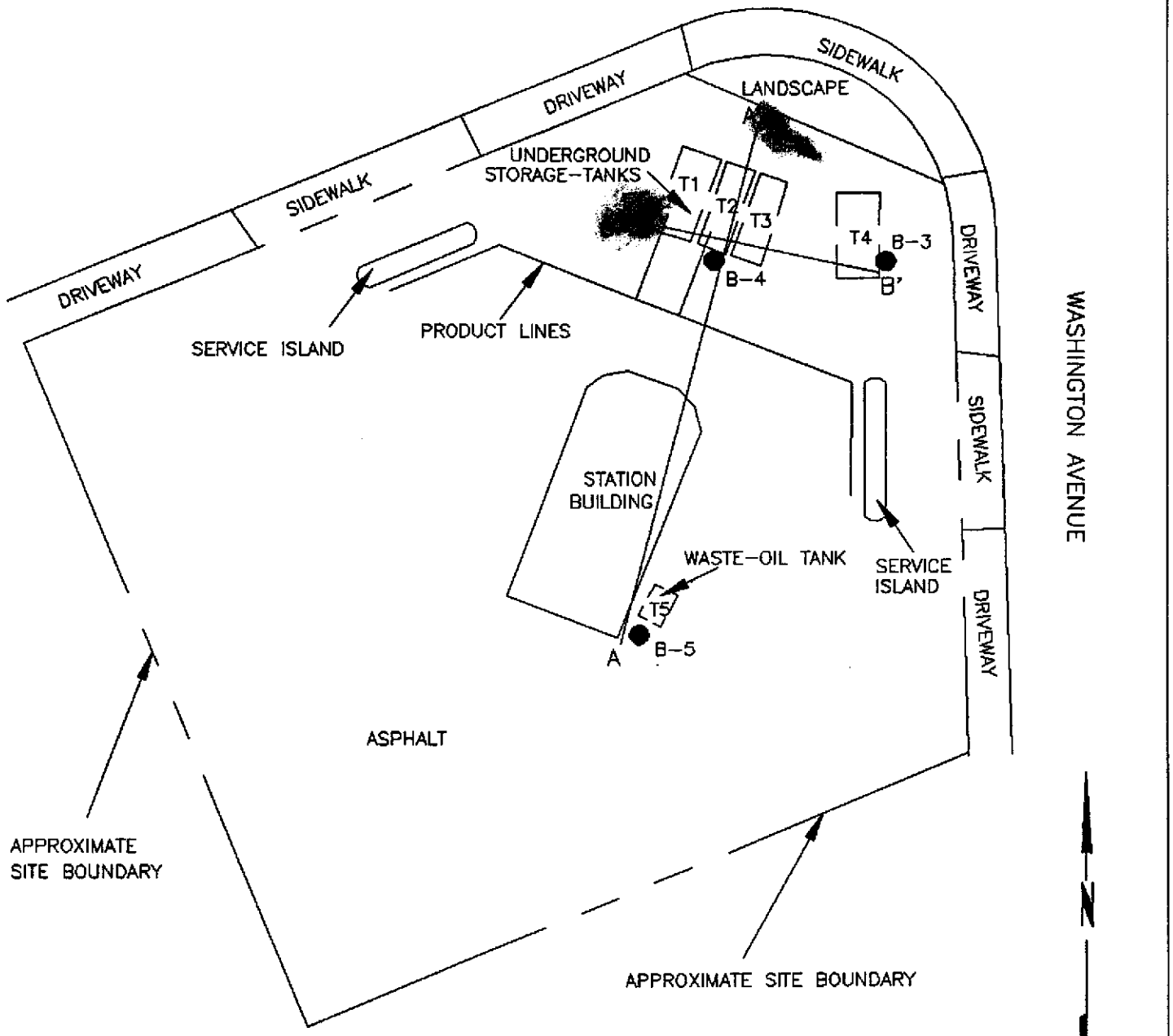
SITE VICINITY MAP
ARCO Service Station No. 601
Washington Avenue & Lewelling Blvd.
San Leandro, California

PLATE
P - 1



A ⟍ A' = Location of cross sections

B ⟍ B' = Presented in Plate P - 9

B-5 ● = Soil boring

Sourse: Modified from plan supplied by Arco

Approximate Scale

30 15 0 30 60

feet

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PROJECT NO. 69034-1

GENERALIZED SITE PLAN
ARCO Service Station No. 601
Washington Ave. and Lewelling Blvd.
San Leandro, California

PLATE

P - 2

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		LTR	DESCRIPTION
Coarse-grained soils	Gravel and gravelly soils	GW	Well-graded gravels of gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	Sand and sandy soils	SW	Well-graded sand of gravelly sands, little or no fines
		SP	Poorly-graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures

MAJOR DIVISIONS		LTR	DESCRIPTION
Fine-grained soils	Silts and clays LL<50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silt-clays of low plasticity
	Silts and clays LL>50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils. Elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
Highly organic soils		PT	Peat and other highly organic soils

Depth through which sampler is driven

Relatively undisturbed sample

No sample recovered

Static water level observed in well

Initial water level observed in boring

S-10 Sample number

Sand pack

Bentonite annular seal

Neat cement annular seal

Caved native soil

Blank PVC

Machine-slotted PVC

P.I.D. Photoionization detector

BLOWS REPRESENT THE NUMBER OF BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES TO DRIVE THE SAMPLER THROUGH EACH 6 INCHES OF AN 18-INCH PENETRATION.

DASHED LINES SEPARATING UNITS ON THE LOG REPRESENT APPROXIMATE BOUNDARIES ONLY. ACTUAL BOUNDARIES MAY BE GRADUAL. LOGS REPRESENT SUBSURFACE CONDITIONS AT THE BORING LOCATION AT THE TIME OF DRILLING ONLY.

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PROJECT NO. 69034-1

UNIFIED SOIL CLASSIFICATION SYSTEM AND SYMBOL KEY
ARCO Service Station No. 601
Washington Ave. and Lewelling Blvd.
San Leandro, California

PLATE
P - 3

Total depth of boring: 15-1/2 feet **Diameter of boring:** 6 inches **Date drilled:** 8-2-89

Casing diameter: N/A **Length:** N/A **Slot size:** N/A

Screen diameter: N/A **Length:** N/A **Material type:** N/A

Drilling Company: Exploration Geoservices **Driller:** Mike & Nevel

Method Used: Hollow-Stem Auger **Field Geologist:** Steve Bittman

Signature of Registered Professional: _____

Registration No.: 1264 **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0						
					Asphalt (6 inches) over baserock (6 inches).	
2	S-2	6 7 12	85	CH	Silty clay, dark gray, damp, medium to high plasticity, very stiff, noticeable product odor.	
4		4				
	S-5	8 12	500		Obvious product odor.	
6						
8						
		7				
10	S-10	12 18	500		Wet, free product.	
12				▽	11 a.m. 8/2/89	
					10 a.m.	
14		18		▽	Silty clay, brown, moist to wet, hard, high plasticity, noticeable product odor.	
	S-15	21 35	8			
16					Total Depth = 15-1/2 feet.	
18						
20						

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LOG OF BORING B - 1

ARCO Service Station No. 601
Washington Avenue & Lewelling Blvd.
San Leandro, California

PLATE P - 4

Total depth of boring: 14-1/2 feet **Diameter of boring:** 6 inches **Date drilled:** 8-2-89

Casing diameter: N/A **Length:** N/A **Slot size:** N/A

Screen diameter: N/A **Length:** N/A **Material type:** N/A

Drilling Company: Exploration Geoservices **Driller:** Mike & Nevel

Method Used: Hollow-Stem Auger **Field Geologist:** Steve Bittman

Signature of Registered Professional: _____

Registration No.: 1264 **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0						
					Asphalt (6 inches) over baserock (6 inches).	
2	S-2	10 6 12	200	ML	Clayey silt, medium gray, damp, low to medium plasticity, very stiff, obvious product odor.	
4				CL	Silty clay with very fine sand, dark gray, damp to moist, medium plasticity, stiff, obvious product odor.	
6	S-5	3 4 7	350			
8				CH	Silty clay, dark gray, damp, high plasticity, stiff, noticeable product odor.	
10	S-10	6 4 8	22	▽	11:20 a.m. 8/2/89	
12				▽	11 a.m.	
14	S-14	12 25	12		Brown, moist to wet.	
					Total Depth = 14-1/2 feet.	
16						
18						
20						

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LOG OF BORING B - 2

ARCO Service Station No. 601
Washington Avenue & Lewelling Blvd.
San Leandro, California

PLATE P - 5

Total depth of boring: 10-1/2 feet **Diameter of boring:** 6 inches **Date drilled:** 8-2-89

Casing diameter: N/A **Length:** N/A **Slot size:** N/A

Screen diameter: N/A **Length:** 10-1/2 feet **Material type:** N/A

Drilling Company: Exploration Geoservices **Driller:** Mike & Nevel

Method Used: Hollow-Stem Auger **Field Geologist:** Steve Bittman

Signature of Registered Professional:

Registration No.: 1264 **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0						
					Asphalt (6 inches) over baserock (6 inches).	
2	S-2	6 10 15	40	ML	Clayey silt, medium gray with green, damp, low plasticity, very stiff, noticeable product odor.	
4				CH	Silty clay, gray, damp, high plasticity, very stiff, noticeable product odor.	
	S-5	6 8 10	70			
6						
8						
10	S-10	6 12 18	350		Dark gray, high plasticity, very stiff, obvious product odor	
					Total Depth = 10-1/2 feet.	
12						
14						
16						
18						
20						

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PROJECT NO. 69034-1

LOG OF BORING B - 3

ARCO Service Station No. 601
Washington Avenue & Lewelling Blvd.
San Leandro, California

PLATE P - 6

Total depth of boring: 10-1/2 feet **Diameter of boring:** 6 inches **Date drilled:** 8-2-89

Casing diameter: N/A **Length:** N/A **Slot size:** N/A

Screen diameter: N/A **Length:** N/A **Material type:** N/A

Drilling Company: Exploration Geoservices **Driller:** Mike & Nevel

Method Used: Hollow-Stem Auger **Field Geologist:** Steve Bittman

Signature of Registered Professional:

Registration No.: 1264 **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0						
					Asphalt (6 inches) over baserock (6 inches).	
2	S-2	7 10 15	50	SC	Clayey sand, medium gray, damp, low plasticity, medium dense, noticeable product odor.	
4				CL	Sandy clay, medium gray, damp, medium plasticity, very stiff, noticeable product odor.	
	S-5	7 10 15	100			
6						
8						
				CH	Silty clay, dark gray, damp, hard, high plasticity, obvious product odor.	
10	S-10	10 18 20	400			
					Total Depth = 10-1/2 feet.	
12						
14						
16						
18						
20						

Applied GeoSystems

PROJECT NO. 69034-1

LOG OF BORING B - 4

ARCO Service Station No. 601
Washington Avenue & Lewelling Blvd.
San Leandro, California

PLATE P - 7

Total depth of boring: 10-1/2 feet **Diameter of boring:** 6 inches **Date drilled:** 8-2-89

Casing diameter: N/A **Length:** N/A **Slot size:** N/A

Screen diameter: N/A **Length:** N/A **Material type:** N/A

Drilling Company: Exploration Geoservices **Driller:** Mike & Nevel

Method Used: Hollow-Stem Auger **Field Geologist:** Steve Bittman

Signature of Registered Professional: _____

Registration No.: 1264 **State:** CA

Depth	Sample No.	Blows/6"	P.I.D.	USCS Code	Description	Well Const.
0						
					Asphalt (6 inches) over baserock (6 inches).	
2	S-2	6 10 24	15	CL	Sandy clay, dark gray with gray, damp, medium plasticity, very stiff, obvious product odor.	
4		6 8		CH	Silty clay, dark gray, damp, high plasticity, very stiff, obvious product odor.	
6	S-5	10	400			
8						
10	S-10	10 17 13	750+			
					Total Depth = 10-1/2 feet.	
12						
14						
16						
18						
20						

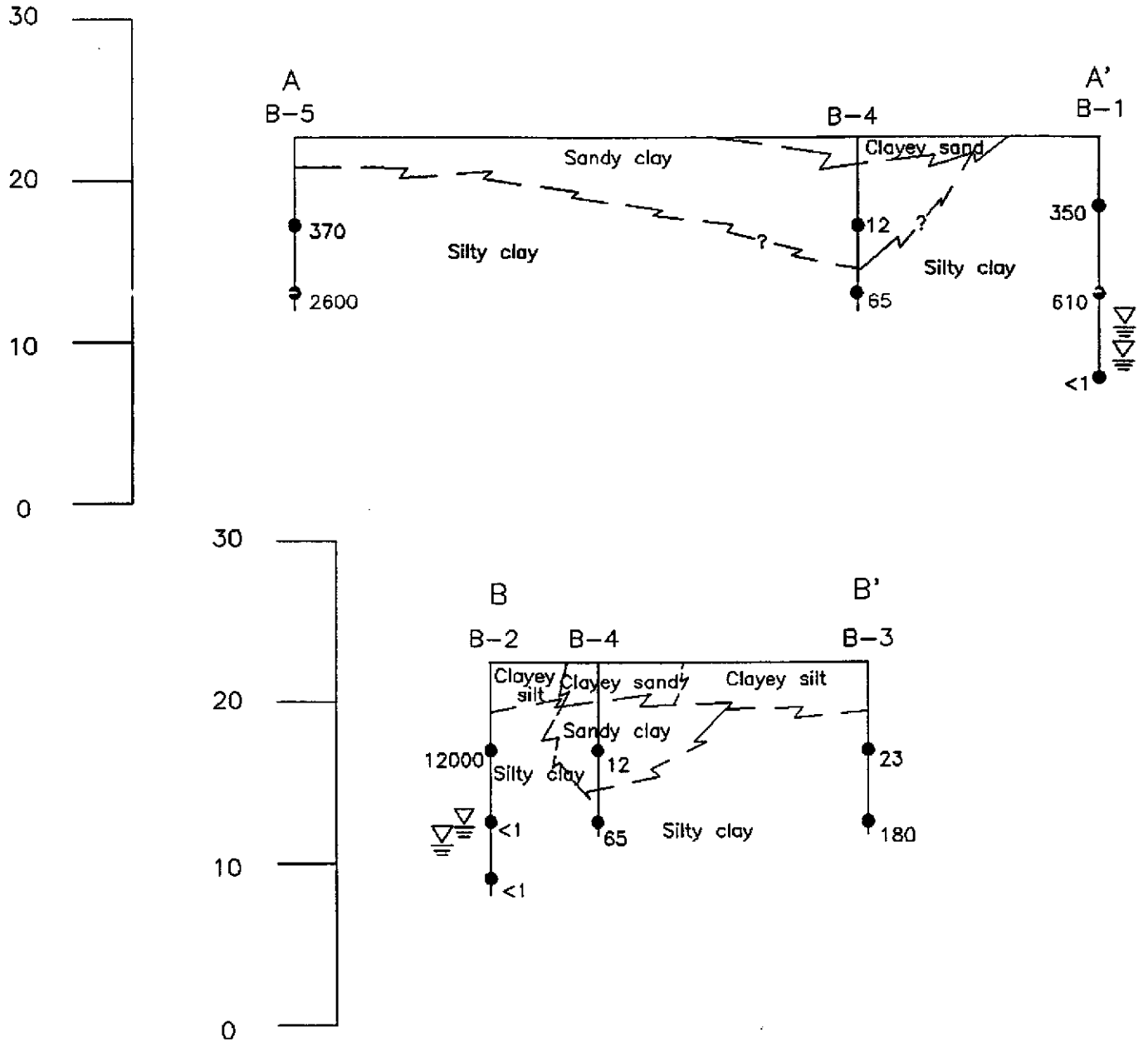
Applied GeoSystems

PROJECT NO. 69034-1

LOG OF BORING B - 5

ARCO Service Station No. 601
Washington Avenue & Lewelling Blvd.
San Leandro, California

PLATE P - 8



= Laboratory-analyzed soil sample showing concentration of TPH in part's per million

= Well casing

= Well screen

= Boring

= Initial water level in boring

= Static water level in well

Approximate Horizontal Scale

20 10 0 20 40

feet

Approximate Vertical Scale

10 5 0 10 20

feet

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PROJECT NO. 69034-1

CROSS SECTION A-A'
AND B-B'
ARCO Service Station No. 601
Washington Avenue & Lewelling Blvd.
San Leandro, California

PLATE
P - 9

APPENDIX A

FIELD PROCEDURES

Site Safety Plan

Field work performed by Applied GeoSystems on behalf of ARCO at the site was conducted in accordance with Applied GeoSystems Site Safety Plan No. 69034-1S, dated August 1, 1989. This plan describes the safety requirements for the evaluation of soil, including soil sampling and drilling of soil borings. The Site Safety Plan is applicable to personnel of Applied GeoSystems and its subcontractors. Applied GeoSystems personnel and subcontractors scheduled to perform the work at the site were briefed on the contents of the Site Safety Plan before work began. A copy of the Site Safety Plan was available for reference by appropriate parties during the work. The Staff Geologist of Applied GeoSystems acted as the Site Safety Officer.

Soil Borings

Prior to the drilling of borings, permits were acquired from the Alameda County Flood Control and Water Conservation District (Zone 7). A copy of the permit is included in Appendix C. Prior to drilling, Underground Service Alert was notified of our intent to drill, and known underground utility lines and structures were approximately marked.

The borings were drilled by a Mobile B-53 truck-mounted drill rig operated by personnel of Exploration Geoservices, of San Jose, California. The drill rig was equipped with 8-inch-diameter, hollow-stem augers. The augers were steam-cleaned prior to drilling each boring to minimize the possibility of cross-contamination. After the borings were drilled, neat-cement grout with bentonite was used to backfill the borings to the ground surface.

Drill Cuttings

Drill cuttings subjectively evaluated as having hydrocarbon contamination at levels greater than 100 parts per million (ppm) were separated from those subjectively evaluated as having hydrocarbon contamination levels less than 100 ppm. Evaluation was based either on subjective evidence of soil discoloration, or on measurements made using an OVM. Readings were collected by placing the intake probe of the OVM against the soil in the brass sleeve promptly after opening the sampler. The drill cuttings from the borings were placed on plastic at the site, and covered with plastic.

Soil Sampling in Borings

Soil samples were collected at 5-foot intervals from the ground surface to the total depth of the borings. The soil samples were collected by advancing the boring to a point immediately above the sampling depth, and then driving a California-modified, split-spoon sampler containing brass sleeves through the hollow center of the auger into the soil. The sampler and brass sleeves were laboratory-cleaned, steam-cleaned, or washed thoroughly with Alconox and water, prior to each use. The sampler was driven 18 inches with a standard 140-pound hammer repeatedly dropped 30 inches. The number of blows to drive the sampler each successive 6 inches was counted and recorded to evaluate the relative consistency of the soil.

The samples selected for laboratory analysis were removed from the sampler and quickly sealed in their brass sleeves with aluminum foil, plastic caps, and aluminized duct tape. The samples were then labeled, promptly placed in iced storage, and delivered to a laboratory certified by the State of California to perform the analyses requested.

One of the samples in brass sleeves not selected for laboratory analysis at each sampling interval was tested in the field using an OVM. This testing was performed by placing the intake probe of the OVM against the soil in the brass sleeve promptly after opening the sampler. The OVM readings are presented in logs of borings.

Logging of Borings

A geologist was present to log the soil cuttings and samples using the Unified Soil Classification System. Samples not selected for chemical analysis, and the soil in the sampler shoe, were extruded in the field for inspection. Logs include texture, color, moisture, plasticity, consistency, blow counts, and any other characteristics noted. Logs also include subjective evidence for the presence of hydrocarbons, such as soil staining, obvious product odor, and OVM readings.

Sample Labeling and Handling

Sample containers were labeled in the field with the job number, sample location and depth, and date, and promptly placed in iced storage for transport to the laboratory. A Chain of Custody Record was initiated by the geologist and updated throughout handling of the samples, and accompanied the samples to a laboratory certified by the State of California for the analyses requested. Samples were transported to the laboratory promptly to help ensure that recommended sample holding times would not be exceeded. Samples will be properly disposed of after their useful life has expired.

ANAMETRIX INC
Environmental & Analytical Chemistry
1961 Concourse Drive, Suite E, San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198

REPORT

Bill Dugan
Applied GeoSystems
3315 Almaden Expressway, Suite 34
San Jose, CA 95118

August 22, 1989
Anametrix W.O.#: 8908063
Date Received : 08/08/89
Project No. : 69034-1

Dear Mr. Dugan:

Your samples have been received for analysis. The REPORT SUMMARY lists your sample identifications and the analytical methods you requested. The following sections are included in this report: RESULTS and QUALITY ASSURANCE.

NOTE: 1) Amounts reported are net values, i.e. corrected for method blank contamination.
2) Samples S-5-B5 and S-10-B5 were analyzed at a dilution due to interference with the large amount of hydrocarbons present.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

ANAMETRIX, INC.

Burt Sutherland
Laboratory Director

BWS/lm

REPORT SUMMARY
ANAMETRIX, INC. (408) 432-8192

Client : Applied GeoSystems
Address : 3315 Almaden Expressway, Suite 34
City : San Jose, CA 95118
Attn. : Bill Dugan

Anametrix W.O.#: 8908063
Date Received : 08/08/89
Purchase Order#: N/A
Project No. : 69034-1
Date Released : 08/22/89

Anametrix I.D.	Sample I.D.	Matrix	Date Sampled	Method	Date Extract	Date Analyzed	Inst I.D.
RESULTS							
8908063-11	S-5-B5	SOIL	08/02/89	8010		08/15/89	HP6
8908063-12	S-10-B5	SOIL	08/02/89	8010		08/15/89	HP6
8908063-01	S-5-B1	SOIL	08/02/89	TPHg		08/10/89	N/A
8908063-02	S-10-B1	SOIL	08/02/89	TPHg		08/10/89	N/A
8908063-03	S-15-B1	SOIL	08/02/89	TPHg		08/09/89	N/A
8908063-04	S-5-B2	SOIL	08/02/89	TPHg		08/10/89	N/A
8908063-05	S-10-B2	SOIL	08/02/89	TPHg		08/09/89	N/A
8908063-06	S-14-B2	SOIL	08/02/89	TPHg		08/09/89	N/A
8908063-07	S-5-B3	SOIL	08/02/89	TPHg		08/10/89	N/A
8908063-08	S-10-B3	SOIL	08/02/89	TPHg		08/10/89	N/A
8908063-09	S-5-B4	SOIL	08/02/89	TPHg		08/10/89	N/A
8908063-10	S-10-B4	SOIL	08/02/89	TPHg		08/10/89	N/A
8908063-11	S-5-B5	SOIL	08/02/89	TPH	08/18/89	08/18/89	N/A
8908063-12	S-10-B5	SOIL	08/02/89	TPH	08/18/89	08/18/89	N/A
QUALITY ASSURANCE (QA)							
6B0815H01	METHOD BLANK	SOIL	N/A	8010		08/15/89	HP6

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 601/8010
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 69034-1 S-5-B5
Matrix : SOIL
Date sampled : 08/02/89
Date analyzed: 08/15/89
Dilution : 5

Anametrix I.D. : 8908063-11
Analyst : JO
Supervisor : CP
Date released : 08/22/89
Instrument ID : HP6

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	5	ND
74-83-9	* Bromomethane	2.5	ND
75-71-8	* Dichlorodifluoromethane	5	ND
75-01-4	* Vinyl Chloride	2.5	ND
75-00-3	* Chloroethane	2.5	ND
75-09-2	* Methylene Chloride	2.5	ND
79-69-4	* Trichlorofluoromethane	2.5	ND
75-35-4	* 1,1-Dichloroethene	2.5	ND
75-34-3	* 1,1-Dichloroethane	2.5	ND
156-59-2	# Cis-1,2-Dichloroethene	2.5	ND
156-60-5	* Trans-1,2-Dichloroethene	2.5	ND
67-66-3	* Chloroform	2.5	ND
76-13-1	# Trichlorotrifluoroethane	2.5	ND
107-06-2	* 1,2-Dichloroethane	2.5	ND
71-55-6	* 1,1,1-Trichloroethane	2.5	ND
56-23-5	* Carbon Tetrachloride	2.5	ND
75-27-4	* Bromodichloromethane	2.5	ND
78-87-5	* 1,2-Dichloropropane	2.5	ND
10061-02-6	* Trans-1,3-Dichloropropene	2.5	ND
79-01-6	* Trichloroethene	2.5	ND
124-48-1	* Dibromochloromethane	2.5	ND
79-00-5	* 1,1,2-Trichloroethane	2.5	ND
10061-01-5	* cis-1,3-Dichloropropene	2.5	ND
110-75-8	* 2-Chloroethylvinylether	5	ND
75-25-2	* Bromoform	2.5	ND
127-18-4	* Tetrachloroethene	2.5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	2.5	ND
108-90-7	* Chlorobenzene	2.5	ND
541-73-1	* 1,3-Dichlorobenzene	5	ND
95-50-1	* 1,2-Dichlorobenzene	5	ND
106-46-7	* 1,4-Dichlorobenzene	5	ND
	% Surrogate Recovery	50-150%	94%

ND : Not detected at or above the practical quantitation limit for the method.
* A 601/8010 approved compound (Federal Register, 10/26/84).
# A compound added by Anametrix, Inc.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 601/8010
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 69034-1 S-10-B5
Matrix : SOIL
Date sampled : 08/02/89
Date analyzed: 08/15/89
Dilution : 50

Anametrix I.D. : 8908063-12
Analyst : JC
Supervisor : CP
Date released : 08/22/89
Instrument ID : HP6

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	50	ND
74-83-9	* Bromomethane	25	ND
75-71-8	* Dichlorodifluoromethane	50	ND
75-01-4	* Vinyl Chloride	25	ND
75-00-3	* Chloroethane	25	ND
75-09-2	* Methylene Chloride	25	ND
79-69-4	* Trichlorofluoromethane	25	ND
75-35-4	* 1,1-Dichloroethene	25	ND
75-34-3	* 1,1-Dichloroethane	25	ND
156-59-2	# Cis-1,2-Dichloroethene	25	ND
156-60-5	* Trans-1,2-Dichloroethene	25	ND
67-66-3	* Chloroform	25	ND
76-13-1	# Trichlorotrifluoroethane	25	ND
107-06-2	* 1,2-Dichloroethane	25	ND
71-55-6	* 1,1,1-Trichloroethane	25	ND
56-23-5	* Carbon Tetrachloride	25	ND
75-27-4	* Bromodichloromethane	25	ND
78-87-5	* 1,2-Dichloropropane	25	ND
10061-02-6	* Trans-1,3-Dichloropropene	25	ND
79-01-6	* Trichloroethene	25	ND
124-48-1	* Dibromochloromethane	25	ND
79-00-5	* 1,1,2-Trichloroethane	25	ND
10061-01-5	* cis-1,3-Dichloropropene	25	ND
110-75-8	* 2-Chloroethylvinylether	50	ND
75-25-2	* Bromoform	25	ND
127-18-4	* Tetrachloroethene	25	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	25	ND
108-90-7	* Chlorobenzene	25	ND
541-73-1	* 1,3-Dichlorobenzene	50	ND
95-50-1	* 1,2-Dichlorobenzene	50	ND
106-46-7	* 1,4-Dichlorobenzene	50	ND
	% Surrogate Recovery	50-150%	104%

ND : Not detected at or above the practical quantitation limit for the method.
* A 601/8010 approved compound (Federal Register, 10/26/84).
\# A compound added by Anametrix, Inc.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 69034-1 S-5-B1
Matrix : SOIL
Date sampled : 08/02/89
Date anl.TPHg: 08/10/89
Date ext.TPHd: N/A
Date anl.TPHd: N/A

Anametrix I.D. : 8908063-01
Analyst : [illegible]
Supervisor : TC
Date released : 08/22/89
Date ext. TOG : N/A
Date anl. TOG : N/A

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	400	8300
108-88-3	Toluene	400	19000
100-41-4	Ethylbenzene	400	5100
1330-20-7	Total Xylenes	400	26000
	TPH as Gasoline	8000	350000

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 69034-1 S-10-B1	Anametrix I.D.	: 8908063-02
Matrix	: SOIL	Analyst	: ON
Date sampled	: 08/02/89	Supervisor	: TC
Date anl.TPHg	: 08/10/89	Date released	: 08/22/89
Date ext.TPHd	: N/A	Date ext. TOG	: N/A
Date anl.TPHd	: N/A	Date anl. TOG	: N/A

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	1000	10000
108-88-3	Toluene	1000	37000
100-41-4	Ethylbenzene	1000	6000
1330-20-7	Total Xylenes	1000	48000
	TPH as Gasoline	20000	610000

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 69034-1 S-15-B1	Anametrix I.D.	: 8908063-03
Matrix	: SOIL	Analyst	: ON
Date sampled	: 08/02/89	Supervisor	: TC
Date anl.TPHg	: 08/09/89	Date released	: 08/22/89
Date ext.TPHd	: N/A	Date ext. TOG	: N/A
Date anl.TPHd	: N/A	Date anl. TOG	: N/A

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	7
108-88-3	Toluene	5	11
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	12
	TPH as Gasoline	1000	ND

ND - Not detected at or above the practical quantitation limit for the method.

TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 69034-1 S-5-B2	Anametrix I.D.	: 8908063-04
Matrix	: SOIL	Analyst	: CN
Date sampled	: 08/02/89	Supervisor	: TC
Date anl.TPHg	: 08/10/89	Date released	: 08/22/89
Date ext.TPHd	: N/A	Date ext. TOG	: N/A
Date anl.TPHd	: N/A	Date anl. TOG	: N/A

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	10000	60000
108-88-3	Toluene	10000	450000
100-41-4	Ethylbenzene	10000	110000
1330-20-7	Total Xylenes	10000	660000
	TPH as Gasoline	200000	12000000

ND - Not detected at or above the practical quantitation limit for the method.

TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 69034-1 S-10-B2	Anametrix I.D.	: 8908063-05
Matrix	: SOIL	Analyst	: DW
Date sampled	: 08/02/89	Supervisor	: TC
Date anl.TPHg	: 08/09/89	Date released	: 08/22/89
Date ext.TPHd	: N/A	Date ext. TOG	: N/A
Date anl.TPHd	: N/A	Date anl. TOG	: N/A

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	15
108-88-3	Toluene	5	16
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	18
	TPH as Gasoline	1000	ND

ND - Not detected at or above the practical quantitation limit for the method.

TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 69034-1 S-14-B2
Matrix : SOIL
Date sampled : 08/02/89
Date anl.TPHg: 08/09/89
Date ext.TPHd: N/A
Date anl.TPHd: N/A

Anametrix I.D. : 8908063-06
Analyst : ON
Supervisor : TC
Date released : 08/22/89
Date ext. TOG : N/A
Date anl. TOG : N/A

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	15
108-88-3	Toluene	5	30
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	35
	TPH as Gasoline	1000	ND

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 69034-1 S-5-B3	Anametrix I.D.	: 8908063-07
Matrix	: SOIL	Analyst	: ON
Date sampled	: 08/02/89	Supervisor	: TC
Date anl.TPHg	: 08/10/89	Date released	: 08/22/89
Date ext.TPHd	: N/A	Date ext. TOG	: N/A
Date anl.TPHd	: N/A	Date anl. TOG	: N/A

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	50	710
108-88-3	Toluene	50	ND
100-41-4	Ethylbenzene	50	400
1330-20-7	Total Xylenes	50	340
	TPH as Gasoline	1000	23000

ND - Not detected at or above the practical quantitation limit for the method.

TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 69034-1 S-10-B3	Anametrix I.D.	: 8908063-08
Matrix	: SOIL	Analyst	: pv
Date sampled	: 08/02/89	Supervisor	: TC
Date anl.TPHg	: 08/10/89	Date released	: 08/22/89
Date ext.TPHd	: N/A	Date ext. TOG	: N/A
Date anl.TPHd	: N/A	Date anl. TOG	: N/A

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	400	700
108-88-3	Toluene	400	3200
100-41-4	Ethylbenzene	400	1400
1330-20-7	Total Xylenes	400	9600
	TPH as Gasoline	8000	180000

ND - Not detected at or above the practical quantitation limit for the method.

TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 69034-1 S-5-B4
Matrix : SOIL
Date sampled : 08/02/89
Date anl.TPHg: 08/10/89
Date ext.TPHd: N/A
Date anl.TPHd: N/A

Anametrix I.D. : 8908063-09
Analyst : ob
Supervisor : TC
Date released : 08/22/89
Date ext. TOG : N/A
Date anl. TOG : N/A

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	50	330
108-88-3	Toluene	50	370
100-41-4	Ethylbenzene	50	ND
1330-20-7	Total Xylenes	50	750
	TPH as Gasoline	1000	12000

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 69034-1 S-10-B4	Anametrix I.D.	: 8908063-10
Matrix	: SOIL	Analyst	: ON
Date sampled	: 08/02/89	Supervisor	: TC
Date anl.TPHg	: 08/10/89	Date released	: 08/22/89
Date ext.TPHd	: N/A	Date ext. TOG	: N/A
Date anl.TPHd	: N/A	Date anl. TOG	: N/A

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	100	1900
108-88-3	Toluene	100	2000
100-41-4	Ethylbenzene	100	700
1330-20-7	Total Xylenes	100	4600
	TPH as Gasoline	2000	65000

ND - Not detected at or above the practical quantitation limit for the method.

TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 69034-1 S-5-B5
Matrix : SOIL
Date sampled : 08/02/89
Date anl.TPHg: 08/15/89
Date ext.TPHd: N/A
Date anl.TPHd: N/A

Anametrix I.D. : 8908063-11
Analyst : ON
Supervisor : TC
Date released : 08/22/89
Date ext. TOG : 08/18/89
Date anl. TOG : 08/18/89

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	100	2100
108-88-3	Toluene	100	3800
100-41-4	Ethylbenzene	100	800
1330-20-7	Total Xylenes	100	2800
	TPH as Gasoline	2000	370000
	Total Oil & Grease	30000	4800000

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
TOG - Total Oil & Grease is determined by Standard Method 503E.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 69034-1 S-10-B5	Anametrix I.D.	: 8908063-12
Matrix	: SOIL	Analyst	: [illegible]
Date sampled	: 08/02/89	Supervisor	: [illegible]
Date anl.TPHg	: 08/15/89	Date released	: 08/22/89
Date ext.TPHd	: N/A	Date ext. TOG	: 08/18/89
Date anl.TPHd	: N/A	Date anl. TOG	: 08/18/89

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	1000	10000
108-88-3	Toluene	1000	90000
100-41-4	Ethylbenzene	1000	21000
1330-20-7	Total Xylenes	1000	130000
	TPH as Gasoline	20000	2600000
	Total Oil & Grease	30000	130000

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
TOG - Total Oil & Grease is determined by Standard Method 503E.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 601/8010
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : METHOD BLANK
Matrix : SOIL
Date sampled : N/A
Date analyzed: 08/15/89
Dilution : NONE

Anametrix I.D. : 6B0815H01
Analyst : JO
Supervisor : CP
Date released : 08/22/89
Instrument ID : HP6

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	1	ND
74-83-9	* Bromomethane	0.5	ND
75-71-8	* Dichlorodifluoromethane	1	ND
75-01-4	* Vinyl Chloride	0.5	ND
75-00-3	* Chloroethane	0.5	ND
75-09-2	* Methylene Chloride	0.5	0.5
79-69-4	* Trichlorofluoromethane	0.5	ND
75-35-4	* 1,1-Dichloroethene	0.5	ND
75-34-3	* 1,1-Dichloroethane	0.5	ND
156-59-2	# Cis-1,2-Dichloroethene	0.5	ND
156-60-5	* Trans-1,2-Dichloroethene	0.5	ND
67-66-3	* Chloroform	0.5	ND
76-13-1	# Trichlorotrifluoroethane	0.5	ND
107-06-2	* 1,2-Dichloroethane	0.5	ND
71-55-6	* 1,1,1-Trichloroethane	0.5	ND
56-23-5	* Carbon Tetrachloride	0.5	ND
75-27-4	* Bromodichloromethane	0.5	ND
78-87-5	* 1,2-Dichloropropane	0.5	ND
10061-02-6	* Trans-1,3-Dichloropropene	0.5	ND
79-01-6	* Trichloroethene	0.5	ND
124-48-1	* Dibromochloromethane	0.5	ND
79-00-5	* 1,1,2-Trichloroethane	0.5	ND
10061-01-5	* cis-1,3-Dichloropropene	0.5	ND
110-75-8	* 2-Chloroethylvinylether	1	ND
75-25-2	* Bromoform	0.5	ND
127-18-4	* Tetrachloroethene	0.5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	0.5	ND
108-90-7	* Chlorobenzene	0.5	ND
541-73-1	* 1,3-Dichlorobenzene	1	ND
95-50-1	* 1,2-Dichlorobenzene	1	ND
106-46-7	* 1,4-Dichlorobenzene	1	ND
	% Surrogate Recovery	50-150%	95%

ND : Not detected at or above the practical quantitation limit for the method.
* A 601/8010 approved compound (Federal Register, 10/26/84).
# A compound added by Anametrix, Inc.

CHAIN OF CUSTODY RECORD

San Jose Branch
3315 Almaden Expressway, Suite 34
San Jose, CA 95118 (408)264-7723

Applied GeoSystems

SAMPLER (signature): Stan Buttimore

Phone: 408 264 7723

LABORATORY:
Anametrix Inc
1961 Concourse Dr Suite E
San Jose, CA

TURNAROUND TIME: 2 weeks (Extract Before Exp!!

Project Leader: Bill Dugan

Phone No. 69034-1

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Tim
Stan Buttimore			
	Received for laboratory by: Gilli Romero	8-8-89	11:

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-5-B1	69034-1	8-2-89	TPH(g) and BTXE using EPA 5030/8015	ICED
S-10-B1				
S-15-B1				
S-5-B2				
S-10-B2				
S-15-B2				
S-5-B3				
S-10-B3				
S-5-B4				
S-10-B4				
S-5-B5			TPH(g) and BTXE using EPA 5030/8015 and Total Oil & grease and Volatile organic compounds using EPA 503E and EPA 8010	
S-10-B5				

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94566 ♦ (415) 484-2600

15 August 1989

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118

Gentlemen:

Enclosed is Groundwater Protection Ordinance permit 89421 for a contamination investigation near the intersection of Washington Avenue with Lewelling Boulevard in San Leandro for Arco Products Company.

Please note that permit condition A-1 requests that an application be submitted five days prior to your proposed start of work.

If you have any questions, please contact Wyman Hong or Craig Mayfield at 484-2600.

Very truly yours,

Mun J. Mar
General Manager

By J. Killingstad
J. Killingstad, Chief
Water Resources Engineering

WH:bkm
Enc.

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

(1) LOCATION OF PROJECT Southwest corner of Washington Avenue and Lewelling Boulevard, San Leandro, CA

(2) CLIENT
Name ARCO Products Company
Address P.O. Box 5811 Phone 571-2400
City San Mateo CA Zip 94402

(3) APPLICANT
Name Applied GeoSystems
3315 Almaden Expressway
Address Suite 34 Phone (408) 264-7723
City San Jose, CA Zip 95118

(4) DESCRIPTION OF PROJECT
Water Well Construction ___ Geotechnical Investigation
Cathodic Protection ___ General
Well Destruction ___ Contamination ✓

(5) PROPOSED WATER WELL USE
Domestic ___ Industrial ___ Irrigation ___
Municipal ___ Monitoring ___ Other ___

(6) PROPOSED CONSTRUCTION
Drilling Method:
Mud Rotary ___ Air Rotary ___ Auger ✓
Cable ___ Other ___

DRILLER'S LICENSE NO. C57 # 484288

WELL PROJECTS
Drill Hole Diameter ___ in. Maximum
Casing Diameter ___ in. Depth ___ ft.
Surface Seal Depth ___ ft. Number ___

GEOTECHNICAL PROJECTS
Number of Borings 5 Maximum
Hole Diameter 9 in. Depth 15 ft.

(7) ESTIMATED STARTING DATE 8-2-89
ESTIMATED COMPLETION DATE 8-2-89

(8) I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Willie R. Dyer Date 8-9-89

FOR OFFICE USE

PERMIT NUMBER 89421
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

A. GENERAL
(1.) A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
(3.) Permit is void if project not begun within 90 days of approval date.

B. WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic, irrigation, and monitoring wells unless a lesser depth is specially approved.

(C.) GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 24 Jul 89
Wyman Hong

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